ABSTRACT

An improved orifice assembly for use with an ultra high pressure fluid jet cutting apparatus is disclosed. The improved orifice assembly generally includes an orifice body defining a central bore, a high pressure inlet cavity located at an upstream portion of the body, a mixing cavity located at a downstream portion of the body, and an abrasive material inlet bore that is in direct communication with the mixing cavity. The inlet or high pressure cavity preferably has a cylindrical cross section at the side wall portion and a generally flat bottom wall, with a constant radius transition portion between the side and bottom walls. A jeweled orifice is preferably located at the bottom wall and forms a portion thereof. A chamfer at the downstream portion of the mixing chamber permits appropriate coaxial alignment of a mixing tube with the jeweled orifice so as to preserve proper fluid flow characteristics. In addition, the incorporation of a soft seal between the mating surfaces of the inlet body and the orifice assembly permit easy user removal of these components from a cutting jet system.